

EXTREMELY LOW COST PRESSURE SENSOR REALIZED USING DEEP REACTIVE ION ETCHING

ABSTRACT

Methods and apparatus for an absolute or gauge pressure sensor having a backside cavity with a substantially vertical interior sidewall. The backside cavity is formed using a DRIE etch or other MEMS micro-machining technique. One embodiment provides for a diaphragm having a boss manufactured using a two step process that results in a boss thickness that is independent of the thickness of the starting material. Another provides for various shapes to the backside cavity that reduces the likelihood of crystalline fractures while focusing stress on piezoresistive sensing elements. Another provides for a sensitivity adjustment by thinning the insulating and silicon layers that form the sensor diaphragm. A pressure sensor according to the present invention may incorporate one or more of these, or may incorporate other elements discussed herein.

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